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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/734,934	12/12/2003	Johan Rune	53807-00020USPT	2221
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ERICSSON INC. 6300 LEGACY DRIVE M/S EVR 1-C-11 PLANO, TX 75024			EXAMINER VU, THONG H	
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			2419	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/734,934

Applicant(s)

RUNE ET AL.

Examiner

Thong H. Vu

Art Unit

2419

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 and 26-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☒ Claim(s) 20-25 and 45-50 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/S5108)
Paper No(s)/Mail Date 10/04; 5/04
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

1. Claims 1-50 are pending.

Claim Rejections - 35 USC § 103

Claims 1-15,26-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitada et al [Kitada 7,469,298 B2] in view of Chen [6,744,740 B2].

2. Claim 1, Kitada discloses A method of establishing a route for a data packet in a point-to-point network, said point-to-point network connected to a shared medium network and having a plurality of nodes including at least one network access point [Kitada, PPPoE, edge switch or network access point, col 7 lines 19-27,57-67, Fig 1A-B] comprising:

broadcasting a route request from a source node to a destination node in said point-to-point network and unicasting a route reply from said destination node to said source node in said point-to-point network [Kitada, the server converts a broadcast ARP request to a unicast ARP, col 6 lines 43-46, col 36 lines 24-40, Fig 57; an ARP reply is unicast, col 22 line 44, col 31 line 55];

establishing a route entry for said source node in each intermediate node receiving said route request and establishing a route entry for said destination node in each intermediate node receiving said route reply [Kitada, a provider edge switch having an entry of an ARP table for a source and destination terminal, col 26 lines 41-56];

Kitada also taught the ARP are integrated into the neighbor Discovery functions [Kitada, col 26 lines 6-16]. However Kitada does not explicitly detail

"including a next hop node indicator in each route entry, said next hop node indicator indicating said shared medium network if a next hop node is located within said shared medium network".

In the same endeavor, Chen taught a network environment with PPPoE support wherein each node has an entry within its Routing Zone range and the packet is forwarded to the next hop node indicated in the Zone routing table [Chen, col 8 lines 46-64]

Therefore it would have been obvious to an ordinary skill in the art at the time the invention was made to incorporate the next-hop in each Routing Zone table indicates the next-hop located within the network as taught by Chen into the Kitada's apparatus in order to utilize the neighbor discovery functions.

Doing so would provide an optimal network without constantly utilizing a shortest path algorithm.

3. Claim 2, Kitada discloses said route request is an Address Resolution Protocol (ARP) request generated in a higher layer of said source node, and said route reply is an ARP reply generated in a higher layer of said destination node [Kitada, ARP reply, col 22 lines 37-50].
4. Claim 3, Kitada discloses obtaining an IP address of said source node from said ARP request and obtaining an IP address of said destination node from said ARP reply

[Kitada, ARP reply, IP address, col 22 lines 37-50].

5. Claim 4, Kitada discloses said IP address of said source node and said IP address of said destination node are obtained by snooping said higher layers of said source node and said destination node, respectively, as said ARP request and said ARP reply are sent down from said higher layers [Kitada, upper layers, col 19 line 67; monitor function, col 21 line 27; ARP reply, col 22 lines 37-50].

6. Claim 5, Kitada discloses said IP address of said source node and said IP address of said destination node are obtained from an ARP cache of said source node and said destination node, respectively [Kitada, ARP table or cache, col 22 line 48].

7. Claim 6, Kitada discloses an IP address of any node in said point-to-point network may be obtained from an IP header of an IP packet sent by said node [Kitada, IPv6 header, col 26 lines 5-15].

8. Claim 7, Kitada discloses an IP address of any node in said point-to-point network may be obtained from a Dynamic Host Configuration Protocol message assigning said IP address to said node [Kitada, DHCP, col 13 line 64].

9. Claim 8, Kitada discloses said ARP reply contains a link local IP address [Kitada, LAN IP, col 21 line 51].
10. Claim 9, Kitada discloses extracting a MAC address of said source node from said ARP reply, replacing a destination MAC address of said ARP reply with said MAC address of said source node, and unicasting said ARP reply without attaching said ARP reply to a non-ARP route reply as inherent feature of ARP reply [Kitada, an ARP reply is unicast, col 22 line 44, col 31 line 55].
11. Claim 10, Kitada discloses extracting a MAC address of said source node from said ARP reply, replacing a destination MAC address of said ARP reply with said MAC address of said source node, and unicasting said ARP reply attached to a non-ARP route reply [Kitada, replacing Mac address, col 26 lines 57-67; an ARP reply is unicast, col 22 line 44, col 31 line 55].
12. Claim 11, Kitada discloses broadcasting said ARP reply without attaching it to said non-ARP route reply after unicasting said ARP reply attached to said non-ARP route reply as inherent feature of broadcast filtering [Kitada, col 16 line 1].
13. Claim 12, Kitada discloses said ARP reply is broadcast using a data packet having a broadcast type that is the same as a broadcast type of a data packet used to

broadcast said ARP request [Kitada, ARP request can be broadcast, col 25 lines 45-50].

14. Claim 13, Kitada discloses detecting a break in a route between two nodes and removing, from a node detecting said break, any route entries that are affected by said break [Kitada, monitor function and remove entries, col 21 lines 9-33].

15. Claim 14, Kitada discloses defining a dependent neighbors table in said detecting node for each route entry affected by said break, and sending a route failure indication message to each node in said dependent neighbors table [Kitada, neighbor discovery, col 26 line 7; notification, col 21 line 21].

16. Claim 15, Kitada discloses said nodes in said dependent neighbors table are upstream nodes that depend on said detecting node to provide a next hop in any route [Kitada, neighbor discovery, col 26 line 7].

17. Claim 26, Kitada discloses A system for establishing a route for a data packet in a point-to-point network, said point-to-point network connected to a shared medium network, comprising:
a source node configured to broadcast a route request to a destination node, said destination node configured to receive said route request and to unicast a route reply to said source node to establish a route therebetween [Kitada, the server converts a

broadcast ARP request to a unicast ARP, col 6 lines 43-46, col 36 lines 24-40, Fig 57;
an ARP reply is unicast, col 22 line 44, col 31 line 55];
an intermediate node configured to establish a route entry for said source node upon receipt of said route request, and establish a route entry for said destination node upon receipt of said route reply [Kitada, a provider edge switch having an entry of an ARP table for a source and destination terminal, col 26 lines 41-56];

Kitada also taught the ARP are integrated into the neighbor Discovery functions [Kitada, col 26 lines 6-16]. However Kitada does not explicitly detail

“a next hop node indicator in each route entry, said next hop node indicator indicating said shared medium network if a next hop node is located within said shared medium network”.

In the same endeavor, Chen taught a network environment with PPPoE support wherein each node has an entry within its Routing Zone range and the packet is forwarded to the next hop node indicated in the Zone routing table [Chen, col 8 lines 46-64]

Therefore it would have been obvious to an ordinary skill in the art at the time the invention was made to incorporate the next-hop in each Routing Zone table indicates the next-hop located within the network as taught by Chen into the Kitada's apparatus in order to utilize the neighbor discovery functions.

Doing so would provide an optimal network without constantly utilizing a shortest path algorithm.

18. Claim 27, Kitada discloses said route request is an Address Resolution Protocol (ARP) request generated in a higher layer of said source node, and said route reply is an ARP reply generated in a higher layer of said destination node [Kitada, ARP reply, col 22 lines 37-50].

19. Claim 28, Kitada discloses said source node is configured to obtain an IP address thereof from said ARP request, and said destination node is configured to obtain an IP address thereof from said ARP reply [Kitada, ARP reply, IP address, col 22 lines 37-50].

20. Claim 29, Kitada discloses said IP address of said source node and said IP address of said destination node are obtained by snoop said higher layers of said source node and said destination node, respectively, as said ARP request and said ARP reply are sent down from said higher layers [Kitada, upper layers, col 19 line 67; monitor function, col 21 line 27; ARP reply, col 22 lines 37-50].

21. Claim 30, Kitada discloses said IP address of said source node and said IP address of said destination node are obtained from an ARP cache of said source node and said destination node, respectively [Kitada, ARP table or cache, col 22 line 48].

22. Claim 31, Kitada discloses an IP address of any node in said point-to-point network may be obtained from an IP header of an IP packet sent by said node [Kitada,

IPv6 header, col 26 lines 5-15].

23. Claim 32, Kitada discloses an IP address of any node in said point-to-point network may be obtained from a Dynamic Host Configuration Protocol message assign said IP address to said node [Kitada, DHCP, col 13 line 64].

24. Claim 33, Kitada discloses said ARP reply contains a link local IP address [Kitada, LAN IP, col 21 line 51].

25. Claim 34, Kitada discloses said network access point is configured to extract a MAC address of said source node from said ARP reply, replace a destination MAC address of said ARP reply with said MAC address of said source node, and unicasting said ARP reply without attaching said ARP reply to a non-ARP route reply as inherent feature of ARP reply [Kitada, an ARP reply is unicast, col 22 line 44, col 31 line 55].

26. Claim 35, Kitada discloses said network access point is configured to extract a MAC address of said source node from said ARP reply, replace a destination MAC address of said ARP reply with said MAC address of said source node, and unicast said ARP reply attached to a non-ARP route reply [Kitada, replacing Mac address, col 26 lines 57-67; an ARP reply is unicast, col 22 line 44, col 31 line 55].

27. Claim 36, Kitada discloses said network access point is further configured to broadcast said ARP reply without attaching it to said non-ARP route reply after unicasting said ARP reply attached to said non-ARP route reply as inherent feature of broadcast filtering [Kitada, col 16 line 1].

28. Claim 37, Kitada discloses said ARP reply is broadcast using a data packet having a broadcast type that is the same as a broadcast type of a data packet used to broadcast said ARP request [Kitada, ARP request can be broadcast, col 25 lines 45-50].

29. Claim 38, Kitada discloses one or more nodes in said point-to-point network are configured to detect a break in a link between said one or more nodes and a neighboring node and to remove any route entries that are affected by said break [Kitada, monitor function and remove entries, col 21 lines 9-33].

30. Claim 39, Kitada discloses said one or more nodes in said point-to-point network are further configured to define a dependent neighbors table for each route entry in said one or more nodes and send a route failure indication message to each node in said dependent neighbors table when said break is detected [Kitada, neighbor discovery, col 26 line 7; notification, col 21 line 21].

31. Claim 40, Kitada discloses said nodes in said dependent neighbors table are upstream nodes that depend on said one or more nodes to provide a next hop in any route [Kitada, neighbor discovery, col 26 line 7].

Claim Rejections - 35 USC § 103

Claims 16-19 and 41-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitada et al [Kitada 7,469,298 B2] in view of Chen [6,744,740 B2] and further in view of Aziz [6,330,671 B1].

32. Claims 16 and 41, Kitada discloses said route is to be established via both said point-to-point network and said shared medium network and via two network access points [see rejection claim 1],

However Kitada and Chen does not detail

a source node hop distance, which is a hop count between said source node and a network access point of said source node, in said route request, and including a destination node hop distance, which is a hop count between said destination node and a network access point of said destination node, in said route reply.

Aziz taught a network environment using the hop count to measure the distance [Aziz, col 10 lines 34-55].

Therefore it would have been obvious to an ordinary skill in the art at the time the invention was made to incorporate the measuring of the hop count to determine a next hop distance as taught by Aziz into the Kitada-Chen apparatus in order to utilize the neighbor discovery function.

Doing so would provide simultaneously and efficiently transmit information to multiple nodes on a network.

33. Claims 17 and 42, the combination of Kitada-Chen and Aziz discloses adding said source node hop distance to a hop count in said route request received from one of said network access points at said destination node, and adding said destination node hop distance to a hop count in said route reply received from another one of said network access points at said source node [Aziz, col 10 lines 34-55].

34. Claims 18 and 43, Kitada discloses said source node and destination node hop distances are contained in an indicator field in said route request or said route reply that also indicates a status of a node originating said route request or said route reply, or a status of said route request or said route reply itself [Kitada, status, col 15 lines 5-32].

35. Claims 19 and 44, Kitada discloses said indicator field includes a "node status unknown" indicator, indicating that said node originating said route request or route reply has lost contact with its most recent network access point [Kitada, status, col 15 lines 5-32].

Allowable Subject Matter

36. Claims 20-25 and 45-50 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thong H. Vu whose telephone number is 571-272-3904. The examiner can normally be reached on 6:00-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Thong H Vu/
Primary Examiner, Art Unit 2419